

REMARKS

Favorable reconsideration of this application, in view of the present amendment and in light of the following discussion, is respectfully requested.

After entry of this amendment Claims 1-21 are pending. Claim 1 is amended and Claim 21 is newly added. No new matter is introduced.

In the outstanding Office Action, Claims 1-2, 5, 7-10 and 18-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Sakakima (U.S. Patent No. 6,005,798); Claims 3-5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakakima in view of Chang (U.S. Patent No. 5,294,287); Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakakima in view of Chang and Grollier ("Switching a Spin Valve Back and Forth by Current-Induced Domain Wall Motion," *Applied Physics Letters*, Volume 83, Number 3, July 21, 2003); Claims 11-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakakima in view of Wang (U.S. Patent No. 6,713,195); Claim 13 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakakima in view of Chang and Wang; and Claims 14-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakakima in view of Zhu (U.S. Patent No. 5,734,605).

Initially, Applicants gratefully acknowledge the courtesy of Examiner Han in holding a personal interview with Applicants' representative on May 25, 2011. During the interview, the outstanding issues in this case were discussed as summarized below and in the Interview Summary, which the Examiner has made of record. Though Examiner Han acknowledged that the amendments presented herein appear to overcome at least the art of record, no agreement was reached pending further search and consideration.

With respect to the rejection of Claims 1-2, 5, 7-10 and 18-20 as being anticipated by Sakakima, Claim 1 is amended to recite, *inter alia*, a current injection-type magnetic domain wall-motion device that includes:

a first magnetic body directly adjacent to a third magnetic body and a second magnetic body directly adjacent to the third magnetic body, the second magnetic body having a magnetization direction antiparallel to that of the first magnetic body, a first microjunction interface between the first and the third magnetic bodies, and a second microjunction interface between the third and the second magnetic bodies, wherein

the magnetization direction of the third magnetic body is controlled in such a manner that a current is applied to pass through the first and second microjunction interfaces, such that a magnetic domain wall present between the first and second magnetic bodies is moved within the third magnetic body in the same direction as that of the current or in the direction opposite to that of the current by the interaction between the magnetic domain wall and a direct flow of the current. (Emphasis added.)

Thus, amended Claim 1 defines a current-injection type magnetic domain wall-motion device that includes a first magnetic body that is directly adjacent to a third magnetic body, which, in turn, is directly adjacent to a second magnetic main body. Claim 1 also defines that the first and second magnetic bodies have opposite magnetization directions, and that the magnetization direction of the third magnetic body is controlled by a current that passes through the first, second and third magnetic bodies. It is believed that no reference cited suggests or discloses the features.

Sakakima described a magneto resistance element (11) composed of a soft magnetic film (3) and a hard magnetic film (1) with a nonmagnetic film (2) is formed therebetween.¹ Sakakima also describes that a conductor line (5) is disposed in the vicinity of the magneto resistance element (11) with an insulating film (6) insulating the magneto resistance element (11) from the conductor line (5).² In operation, Sakakima describes that a current flows through conductor line (5) and the resulting magnetic field inverts the magnetization of the soft magnetic film (3).³

¹ Sakakima at column 11, line 58 - column 12, line 19; see also Figure 1.

² Sakakima at column 13, lines 45-54; see also Figure 4.

³ Sakakima at column 14, lines 24-38.

However, Sakakima does not describe that the magnetic films (1, 3) are directly adjacent to each other. Instead, Sakakima clearly illustrates that a non-magnetic film (2) separates the two magnetic films (1, 3).⁴ Further, Sakakima describes that the applied current travels through the conductor line (5), which is insulated from the films (1, 2 and 3) by the insulating film (6).⁵ In other words, Sakakima describes that the current flowing through the magneto resistance device is limited to the conductor line (5) and that magnetization of the soft magnetic film (3) is controlled by the resulting magnetic field rather than by direct interaction of the soft magnetic film (3) with the current. Conversely, amended Claim 1 recites a first magnetic body directly adjacent to a third magnetic body and a second magnetic body directly adjacent to the third magnetic body, and that the magnetization direction of the third magnetic body is controlled *by interaction between the magnetic domain wall and a direct flow of the current*. Therefore, Sakakima fails to disclose these claimed features, and amended Claim 1 is believed to be in condition for allowance, together with any claim depending therefrom. Accordingly, it is respectfully requested that the rejection of Claims 1-2, 5, 7-10 and 18-20 under 35 U.S.C. § 102(b) be withdrawn.

As all other rejections of record rely upon Sakakima for describing the above-distinguished features, and the above-distinguished features are not disclosed or suggested by Sakakima, alone or in combination with any other art of record, it is respectfully submitted that a *prima facie* case of obviousness cannot be maintained. Accordingly, it is respectfully requested that the rejection of Claims 3-4, 6, 11-17 under 35 U.S.C. § 103(a) be withdrawn.

Further, new Claim 21 recites features not disclosed in any art of record and is therefore believe to be in condition for allowance.

⁴ See, for example, Figure 1 of Sakakima.

⁵ Sakakima at column 13, lines 45-54 and column 14, lines 24-38.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 1-21 is earnestly solicited.


Respectfully submitted,

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